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Inebriation, Drinking Motivations and Sexual Risk Taking Among Sexually Transmitted Disease Clinic Patients in St. Petersburg, Russia

Nadia Abdala · Laretta E. Grau · Weihai Zhan ·
Alla V. Shaboltas · Roman V. Skochilov ·
Andrei P. Kozlov · Tatiana V. Krasnoselskikh

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Abstract We investigated whether inebriation was associated with having non-main partners and unprotected sex with non-main partners and whether drinking motivations were associated with sexual risk behaviors among patients attending an STD clinic in St Petersburg, Russia. A cross-sectional behavior survey was applied to 362 participants between 2008 and 2009. Multivariate logistic regression was used for analysis. At-risk drinking per Alcohol Use Disorders Identification Test (AUDIT-C) criteria (OR 2.5, 95% CI 1.4–4.4) was independently associated with having non-main sexual partners. Inebriation (OR 3.2, 95% CI 1.3–8.1) but not at-risk drinking or drinking prior to sex was associated with unprotected sex with non-main partners. Among drinkers, the consumption of alcohol to facilitate sexual encounters (OR 2.7, 95% CI 1.6–4.5) was associated with having non-main sexual partners. HIV prevention programs in Russia must address inebriation in addition to conventional patterns of problem drinking such as those measured by AUDIT-C and consider individuals' motivations to drink that lead to sexual risk taking.

Keywords Sexual risk behaviors · STD clinic · Russia · Drinking motivation · Inebriation · AUDIT-C

N. Abdala (✉) · L. E. Grau
Yale School of Public Health, 60 College Street, New Haven,
CT 06520, USA
e-mail: nadia.abdala@yale.edu

W. Zhan
Department of Psychology, Wesleyan University, 117 Allbritton
Center, 207 High Street, Middletown, CT 06459, USA

A. V. Shaboltas · R. V. Skochilov · A. P. Kozlov ·
T. V. Krasnoselskikh
The Biomedical Center, 8 Vyborgskaya Street,
St. Petersburg 194044, Russian Federation

Introduction

The level of alcohol consumption in Russia is among the highest in the world [1]. Alcohol related problems in Russia are varied including high mortality due to alcohol poisoning [2, 3], high crime rates [4, 5] and a greater risk for health problems [1, 6]. Problem drinking is also an important health concern because it is associated with sexual behaviors that place individuals at risk for HIV [7]. Furthermore, data from the Russian Ministry of Health show that sexual transmission of HIV has increased between 2002 and 2007 [8], indicating that the HIV epidemic could be spreading to the general population [8, 9]. Thus, the design and prioritization of public health interventions to prevent the transmission of sexually transmitted diseases including HIV (STDs/HIV), and to reduce alcohol-related morbidity and mortality in Russia would benefit greatly from a better understanding between problem drinking and sexual risk taking.

The high rates of alcohol related negative outcomes in Russia has been partly attributed to a preference for distilled spirits and a high social tolerance for heavy drinking throughout the country [10, 11]. Inebriation is an important factor related to heavy drinking and is often reported as the basis for hazardous drinking. A study in Russia identified 10% of participants who drank with the intention to become drunk for extended periods of time and withdraw from normal life [12]. In this study, this pattern of drinking to inebriation was associated with unemployment and with low levels of education [12]. In studies of adolescents and young adults from Finland, the United States and Britain, drunkenness, or drinking to get drunk, was shown to be associated with having multiple sexual partners [13], unplanned sexual intercourse [14] and intercourse before the age of 16 [15]. A recent study of trends in alcohol

consumption among adolescents across different countries revealed that in Russia the trends for alcohol use and drunkenness were opposite. That is, while monthly drinking declined, drunkenness increased [16]. Therefore, the investigation of the specific outcomes associated with inebriation patterns may be useful in designing programs to reduce alcohol related harm in Russia.

Since cultural factors may influence one's motivation to drink, a study of the particular motivations of different individuals may provide helpful information regarding the context of alcohol related risk behaviors. This is especially the case in Russia, where evidence suggests that alcohol use is particularly accepted or even encouraged [7, 17], thereby providing social and cultural contexts that may increase the risk of alcohol related negative outcomes. Despite previous studies showing that economic strain and emotional distress may be associated with drinking problems in Russia [18, 19], few studies have investigated drinking motivations, especially not in relation to sexual risk behaviors that potentially expose individuals to STDs/HIV.

For these reasons we conducted an initial study to investigate the association of sexual risk behaviors with inebriation frequency and drinking motivations among a sample of Russian STD clinic patients. Given the greater risk for STD transmission and of an expansion of the HIV epidemic from having sex with non-main partners rather than with main partners [20, 21], this study analyzed drinking patterns in relation to non-main sexual partnerships. Specifically, this study sought to do the following: (1) to determine whether inebriation was associated with having non-main partners; (2) to determine whether, among non-main partnerships, inebriation was independently associated with unprotected sex; and (3) among those who used alcohol, to assess whether drinking motivation was associated with sexual risk taking.

Methods

Setting and Study Procedures

This study was conducted at the Dispensary for Skin and Venereal Diseases (STD clinic) in Kalininsky District, St. Petersburg, Russia from July 2008 to February 2009. The clinic, which is funded by the government of St. Petersburg, sees approximately 2,500 patients per year and provides services free of charge or for a nominal fee. The majority of patients are district residents. Consecutive individuals above 18 years of age who presented with genitourinary complaints or a need for STD-related services (e.g., STD symptoms, STD testing or STD counseling) were invited to participate in the study. Potential

participants were informed of the purpose of the study and assured that the survey was anonymous and voluntary. Those who agreed to participate and provided written informed consent completed the self-administered survey in a private office at the clinic. The study was approved by the institutional review boards at the Biomedical Center in St. Petersburg, Russia and Yale University, USA.

Data Collection and Measures

A 58-item questionnaire was used to collect information regarding socio-demographics, health status, motivations for alcohol use and HIV-associated sexual risk behaviors. Socio-demographic items included age, sex, occupation, education, income, and marital and housing status. Self-reported health data included history of STD diagnoses, HIV testing and results, illicit drug use in the previous 3 months, and lifetime injection drug use.

Participants were asked whether they consumed alcoholic beverages, the frequency of alcohol use in the last 3 months, the typical number of alcoholic drinks at each drinking session, the number of times they drank more than six drinks in a row per drinking occasion in the previous 3 months and the frequency with which they drank to inebriation during the previous 3 months. Inebriation was defined as drinking to inebriation once a month or more often. At-risk drinking was defined as scores greater than three for males and greater than two for females according to the Alcohol Use Disorders Identification Test (AUDIT-C) raw aggregate score. Previous studies have shown that AUDIT-C can effectively identify alcohol misuse [22, 23]; therefore this variable was included in our analyses.

Following questions about alcohol use in the previous three months, participants were asked to indicate in a four point Likert scale, possible reasons or contexts within which they drank. Based on a need to limit the time to complete the questionnaire to approximately 1 h, 11 items were selected and translated from existing measures [24, 25]. These were used to assess motivations for drinking among those participants who reported alcohol use. Questions related to enhancing mood included the following: I drink alcohol because (1) it helps me when I feel depressed, (2) it helps me when I feel nervous, (3) it makes me feel more positive about my future and (4) it makes me feel more powerful. Questions related to the facilitation of sex were the following: I drink alcohol (1) to create a romantic mood for my relationship, (2) because I enjoy sex more after I drink alcohol and (3) because alcohol helps me incline my partner toward sex. Questions related to the facilitation of social interactions were the following: I drink alcohol because (1) it is customary on special occasions, (2) my friends will be more accepting of me when I drink, (3) alcohol makes me feel less shy and (4) it is easier

for me to talk to people when I drink. We assumed a priori that the 11 items would cluster as three subscales (i.e., mood enhancement, facilitation of social interactions, and facilitation of sex [26]). To confirm our assumption, we calculated inter-item correlations using Cronbach's alpha. Items correlated sufficiently to justify the creation of two subscales, (1) *mood enhancement* (four items; $\alpha = 0.725$) and (2) *facilitation of sex* (three items; $\alpha = 0.734$). Items regarding the motivations to facilitate social interactions subscale were excluded from further analyses due to low inter-item reliability (Cronbach's $\alpha = 0.2$). For the remaining two subscales, we computed z-scores for each item, summed the z-scores for the respective items within each subscale and subsequently dichotomized each subscale (based on a median split).

HIV-associated sexual risk behavior data were collected for two types of sexual partners: main/regular partner and non-main partners (i.e., casual or commercial). For each partner category, respondents were asked about the number of partners they had had within the preceding 3 months, the number of vaginal and the number of anal sex acts in the preceding 30 days, the number of vaginal and the number of anal sex acts in which condoms were used in the preceding 30 days, and the number of vaginal and anal sex acts in which alcohol was consumed prior to sex in the preceding 30 days. Participants' reporting of alcohol use prior to intercourse with a non-main partner (yes/no) was considered as having consumed "alcohol prior to sex."

Having non-main sexual partners was chosen as the outcome of interest because data were collected regarding sex practices with main and non-main partners as categories. Unprotected sex with non-main sexual partners was chosen as a second outcome because sexual risk behaviors, including the effects of alcohol use prior to sex, have been shown to vary significantly based on whether a sexual partner is a main or a non-main partner [20, 27]. Moreover, as explained in the introduction, a greater risk of STD transmission and of a generalization of the HIV epidemic arises from having sex with non-main partners rather than main partners [21]. Similarly, we included whether participants lived with parents/relatives in our analyses because of evidence that living with family may influence the occurrence of substance use and sexual risk behaviors and how risky these behaviors are when they take place [28, 29].

Data Analysis

This analysis began with the investigation of inebriation in relation to two main dichotomous outcomes: (1) having a non-main sexual partner in the prior 3 months and (2) among those reporting non-main partners, having unprotected sex with that partner. Standard descriptive statistics were used to describe the sample. Bivariate associations between

outcomes and independent variables, such as socio-demographics, health risks, at-risk drinking and alcohol use prior to sex, were initially assessed, and associations at $P < 0.20$ were entered into multivariate logistic regression models. Backward stepwise elimination was used to produce adjusted odds ratios for those variables with P values ≤ 0.05 . To assess independent associations between inebriation and unprotected sex with non-main partners, a similar analysis restricted to those participants who reported having non-main partners was conducted. Finally, to assess whether an independent association existed between drinking motivations and the two sexual risk outcomes, we conducted additional analyses restricted to those reporting alcohol use in the preceding 3 months. Similar procedures to those described above were used to produce multivariate models that included drinking motivations as independent variables. All data were analyzed using SPSS 17.

Results

Characteristics of the Study Sample

A total of 440 STD clinic patients completed the questionnaire. Fifty-nine participants who reported having no sex partner and 19 who did not report the number of their sex partners were excluded from the current analysis. The final sample included in this analysis totaled 362 participants.

The study sample was 65% male (Table 1); only four men reported having male sex partners. The median age was 25 years; 56% possessed at least some university education; 69% resided in housing that they owned; 65% were employed full-time; 46% were married, and 51% lived with parents or relatives. The most frequently reported income range was from 15,000 to 29,999 rubles per month (equivalent to approximately 575.00–1,150.00 US dollars). Most participants (69%) reported having been tested at least once for HIV; of those, 97% reported receiving negative results, and the remainder reported not having returned for their test results. With respect to STD history, 11% reported having been diagnosed with gonorrhea, chlamydia, or syphilis within the preceding 6 months.

Drug injection in the previous 3 months was reported by 3%. The majority of participants (89%) reported consuming alcohol within the previous 3 months. A total of 33 and 50% of all respondents reported monthly inebriation and received an at-risk drinking score, respectively. At least one non-main partnership in the previous 3 months was reported by 34%. Of the 124 participants who reported having non-main partnerships and reported on condom use within those partnerships, 50% reported at least one act of unprotected sex within the previous 30 days and 76% reported alcohol consumption prior to sex with that partner.

Table 1 Characteristics of study participants ($n = 362$)

	n (%) ^a
Demographics	
Male	235 (64.9)
Age (median years, interquartile range)	25, 21–30
At least some university education	204 (56.3)
Lives in own home	250 (69.4)
Employed full time	234 (64.6)
Monthly income below 15,000–29,999 rubles ^b	121 (36.0)
Married	167 (46.3)
Living with parents or relatives	181 (50.6)
Sexual behaviors and HIV/STD testing	
At least one non-main sexual partner, past 3 months	124 (34.0)
Had unprotected sex with a non-main partner ^c	45 (48.9)
Ever tested for HIV	232 (68.8)
HIV-negative test result	218 (96.5)
Had an STD in the past 6 months ^d	37 (11.0)
Patterns of substance use	
Ever injected illicit drugs	11 (3.2)
Used alcohol, past 3 months	320 (89.1)
Inebriated (drunk) at least once a month, past 3 months	116 (33.4)
At-risk drinking per AUDIT-C, past 3 months	173 (50.3)
Alcohol prior to sex with non-main partner ^c	71 (75.5)

^a Due to missing data percentage may not be among the total 362 participants

^b The most frequently endorsed income range

^c Among those with non-main partners

^d Syphilis, chlamydia or gonorrhea (self reported by participant)

Correlates of Having Non-Main Partnerships

The results of bivariate and multivariate logistic regressions for the outcome of reporting at least one non-main sex partner in the 3 months prior to the interview are presented in Table 2. Multivariate analysis among all participants ($n = 362$) showed non-main partnerships to be independently associated with being male, unmarried, and at-risk drinking.

Correlates of Having Unprotected Sex Among Non-Main Partnerships

In an analysis restricted to participants who reported having non-main partnerships in the previous 3 months ($n = 124$), unprotected sex was independently associated with being unmarried and with inebriation once a month or more often (Table 3).

Drinking Motivations Among Participants

In a model that included the two drinking motivation subscales and was restricted to those participants reporting alcohol consumption ($n = 320$; Table 4), having a non-main partnership was independently associated with consuming alcohol to facilitate sexual encounters.

In the analysis restricted to participants who reported non-main sexual partnerships in the previous 3 months, neither drinking to improve one's mood nor to facilitate sex was associated with the outcome of unprotected sex (not shown in the table).

Discussion

At-risk drinking was independently associated with having non-main sexual partners. This is consistent with a previous finding that showed alcohol use to be culturally accepted as a facilitator of sexual encounters among Russian men in particular [7].

Unprotected sex with non-main partners was associated with inebriation and not with at-risk drinking. Our results are consistent with findings from a previous study that failed to detect an association between condom use and a heavy drinking pattern such as binge drinking among substance users in Russia [30], and with a study showing evidence that frequency of intoxication may better detect certain types of alcohol related harm than drinking volume [31]. The greater risk for unprotected sex associated with inebriation compared to at-risk drinking can be explained by the subjective or idiosyncratic nature of the interpretation of drunkenness [32, 33], i.e., inebriation may be

Table 2 Logistic regression, had non-main sex partner(s) in last 3 months ($n = 362$)

Independent variable	uOR (95% CI)	P value	aOR (95% CI)	P value
Male	3.1 (1.8–5.1)	<0.0001	1.8 (1.0–3.2)	0.037
Married	0.4 (0.3–0.7)	<0.0001	0.5 (0.3–0.8)	0.008
Lives with parents or relatives	1.7 (1.1–2.6)	0.023	–	–
Inebriated at least monthly	2.5 (1.3–4.6)	0.005	1.7 (1.0–3.0)	0.056
At-risk drinking per AUDIT-C	4.0 (2.5–6.6)	<0.0001	2.5 (1.4–4.4)	0.001

Also controlled for age, education, employment, residence ownership and income (none significant)

Table 3 Logistic regression, unprotected sex (among those who had non-main sex partners only) ($n = 124$)

Independent variable	uOR (95% CI)	<i>P</i> value	aOR (95% CI)	<i>P</i> value
Married	0.3 (0.1–0.8)	0.010	0.3 (0.1–0.7)	0.012
Inebriated at least monthly	3.1 (1.3–7.6)	0.012	3.2 (1.3–8.1)	0.014
At-risk drinking per AUDIT-C	1.2 (0.5–3.3)	0.67	–	–
Alcohol prior to sex	1.0 (0.4–2.6)	0.98	–	–

Also controlled for age, sex, education, employment, residence ownership, living with parents or relatives, and income (all not significant)

Table 4 Logistic regression, had non-main sex partner(s) in last 3 months (among drinkers) ($n = 320$)

Independent variable	uOR (95% CI)	<i>P</i> value	aOR (95% CI)	<i>P</i> value
Male	2.3 (1.4–3.9)	0.002	2.0 (1.1–3.7)	0.017
Married	0.4 (0.3–0.7)	0.001	0.6 (0.3–0.9)	0.050
Lives with parents or relatives	1.6 (1.0–2.6)	0.044	–	–
Drinks to improve mood	1.8 (1.1–3.1)	0.016	–	–
Drinks to facilitate sexual encounters	2.9 (1.7–4.8)	<0.0001	2.7 (1.6–4.5)	<0.0001

Also controlled for age, education, employment, residence ownership and income (all not significant)

Drinking motivations were not independently associated with unprotected sex among those who had non-main sexual partners

reported even by individuals who have ingested low volumes of alcohol. The risks associated with inebriation may result from a lower tolerance for the sedative and light-headed effects of alcohol [34, 35], a lower self-efficacy to reduce risk behaviors [36] or drinking motivations or expectations that lead to sexual risk taking [37] among those who become inebriated compared to those who do not. Thus, our results suggest that frequency of inebriation is an important drinking pattern for the identification of sexual risk behaviors among populations at risk for STDs/HIV in Russia and it should be taken in consideration by programs to reduce sexual HIV transmission and alcohol related harms.

Unprotected sex with non-main partners was associated with inebriation at least once a month, rather than with drinking prior to sex. This finding is consistent with results suggesting that associations between inebriation at the time of intercourse and unprotected sex might reflect the greater probability of a heavy or frequent drinker being inebriated at any given moment, rather than the effect of drinking during sexual occasions [38]. This is especially true for this study sample, because the majority of the participants reported drinking prior to sex. Our findings suggest that interventions that address general (i.e., monthly) patterns of alcohol use rather than alcohol use in sexual situations may be able to reduce rates of unprotected sex among this population. These results should be confirmed by future studies that include event level strategies to identify drinking patterns that may lead to unprotected sex among participants.

Drinking to facilitate sex was associated with having non-main sex partners, further supporting the notion that alcohol use is a culturally accepted facilitator of sexual encounters

and perhaps a demonstration of masculinity among Russian men [7]. One European study [39] identified two basic classes of drinking motivations: (a) drinking to reduce tension or emotional distress and (b) drinking to facilitate social contacts. Our results may be consistent with findings from researchers who suggest that drinking to increase sexual activity plays a role primarily in the latter category of drinking motivations [40]. Our findings suggest that studies to reduce alcohol related harm in Russia may benefit from investigating and addressing drinking motivations that lead to sexual risk behaviors in populations at risk for STDs.

Several limitations of the study should be noted. The data were collected from a clinical rather than a probability sample, which may limit the potential ability to generalize the study's findings. Because recruitment occurred with help from the STD physicians and not all clinic physicians participated in this study, our results may have been different from that of another patient sample taken from this same clinic. The self-reported data are likely vulnerable to recall and social desirability biases, potentially resulting in an underestimation of alcohol use or the prevalence of non-main partnerships. Little is known about cultural differences in self-reports of substance use and sexual behavior in Russia. The data concerning alcohol consumption during or just prior to sexual activity did not assess the participants' level of inebriation, the drinking behaviors of their partners, or how long drinking occurred prior to sex. Participants' motivations to get drunk were not assessed. The drinking motivation items have not been validated for use in the Russian population; therefore they may not be an accurate measure of motivations for drinking among this population.

Conclusions

HIV prevention programs to reduce alcohol related sexual risk behaviors among populations at risk for STDs in Russia must address patterns of inebriation in addition to conventional patterns of problem drinking, such as those measured by AUDIT-C. Health promotion interventions should aim to increase awareness of how drinking patterns and drinking in order to facilitate sexual encounters may place people at risk for HIV/STD infection.

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Conflict of Interest No competing financial interests exist. The authors alone are responsible for the content and writing of the paper.

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